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EXAMINER	
TRAN, DALENA	
ART UNIT	**PAPER NUMBER**
3661	

DATE MAILED: 05/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/943,308	WALENTY ET AL.	
	Examiner	Art Unit	
	Dalena Tran	3661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4,5 and 7-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *12* is/are allowed.

6)☒ Claim(s) *1,2,4,5,7-11 and 13-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Notice to Applicant(s)

1. This office action is responsive to the amendment filed on 2/23/04. Claims 1-2,4-5, and 7-15 are pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-2, are rejected under 35 U.S.C.103(a) as being unpatentable over Toepfer et al. (6,460,943) in view of Toepfer et al. (5,470,134).

As per claim 1, Toepfer et al. ('943) disclose a method of operation for a vehicle braking system including a driver activated brake pedal, a brake pressure modulator, and an anti-lock brake control that activates the brake pressure modulator to modulate vehicle braking upon detection of an insipient wheel lock condition, the method comprising the steps: periodically measuring vehicle deceleration and a brake pedal position during activation of the braking system when insipient wheel lock condition is not detected (see columns 3-4, lines 32-35; identifying conditions of degraded braking effectiveness based on the periodically measuring vehicle deceleration and brake pedal position (see the abstract), adaptively adjusting a brake pressure control parameter of anti-lock brake control when a condition of degraded braking effectiveness is identified so as to compensate for the identified condition (see column 2, lines

4-42; columns 4-5, lines 63-29; columns 5-6, lines 57-20; and columns 6-7, lines 52-15). Toepfer et al. ('943) do not disclose brake wear. However, Toepfer et al. ('134) disclose the identified condition of degraded braking effectiveness is brake wear, and the determined apply rate is increased by a predefined factor (see columns 6-7, lines 38-44). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teach of Toepfer et al. ('943) by combining identified condition of degraded braking effectiveness is brake wear, and the determined apply rate is increased by a predefined factor to provide an increased rate of brake pressure application to improve the reliability of vehicle braking system.

As per claim 2, Toepfer et al. ('943) disclose wherein the anti-lock brake control releases and then re-applies brake pressure at a determine apply rate upon detection of an insipient wheel lock condition, and the step of adaptively adjusting a brake control parameter includes adjusting the determined apply rate in a manner to provide an increased rate of brake pressure application (see column 2, lines 4-42).

4. Claim 13, is rejected under 35 U.S.C.103(a) as being unpatentable over Toepfer et al. (6,460,943) in view of Sakuma et al. (5,125,723).

As per claim 13, Toepfer et al. disclose a method of operation for a vehicle braking system including a driver activated brake pedal, a brake pressure modulator, and an anti-lock brake control that activates the brake pressure modulator to modulate vehicle braking upon detection of an insipient wheel lock condition, the method comprising the steps: periodically measuring vehicle deceleration and a brake pedal position during activation of the braking system when insipient wheel lock condition is not detected (see columns 3-4, lines 32-35;

identifying conditions of degraded braking effectiveness based on the periodically measuring vehicle deceleration and brake pedal position (see the abstract), adaptively adjusting a brake pressure control parameter of anti-lock brake control when a condition of degraded braking effectiveness is identified so as to compensate for the identified condition, wherein the anti-lock brake control releases and then re-applies brake pressure at a determined apply rate upon detection of an insipient wheel lock condition (see column 2, lines 4-42; columns 4-5, lines 63-29; columns 5-6, lines 57-20; and columns 6-7, lines 52-15). Toepfer et al. do not disclose road surface coefficient of friction. However, Sakuma et al. disclose estimating a road surface coefficient of friction based on the periodically measured deceleration and brake pedal position (see column 3, lines 26-42; and column 4, lines 49-60), determining apply rate based on the estimated a road surface coefficient of friction when conditions of degraded braking effectiveness are not identified (see column 6, lines 25-68), and determining apply rate based on the estimated a road surface coefficient of friction and a measure of braking effectiveness degradation when the conditions of degraded braking effectiveness is identified (see column columns 5-6, lines 29-23). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teach of Toepfer et al. by combining estimating a road surface coefficient of friction based on the periodically measured deceleration and brake pedal position for appropriately adjusting braking control based on various driving surface conditions.

5. Claim 10, is rejected under 35 U.S.C.103(a) as being unpatentable over Toepfer et al. (6,460,943) in view of Eslinger et al. (5,613,744).

As per claim 10, Toepfer et al. disclose a method of operation for a vehicle braking system including a driver activated brake pedal, a brake pressure modulator, and an anti-lock brake control that activates the brake pressure modulator to modulate vehicle braking upon detection of an insipient wheel lock condition, the method comprising the steps: periodically measuring vehicle deceleration and a brake pedal position during activation of the braking system when insipient wheel lock condition is not detected (see columns 3-4, lines 32-35; identifying conditions of degraded braking effectiveness based on the periodically measuring vehicle deceleration and brake pedal position (see the abstract), adaptively adjusting a brake pressure control parameter of anti-lock brake control when a condition of degraded braking effectiveness is identified so as to compensate for the identified condition (see column 2, lines 4-42; columns 4-5, lines 63-29; columns 5-6, lines 57-20; and columns 6-7, lines 52-15). Toepfer et al. do not disclose brake temperature. However, Eslinger et al. disclose monitoring brake temperature to determine the degraded braking generated by brake fade (see the abstract; column 1, lines 39-57; and columns 3-4, lines 61-59). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teach of Toepfer et al. by combining monitoring brake temperature to determine the degraded braking generated by brake fade for correction of braking value at an equalization of braking value temperature of the wheel brake.

6. Claims 11, and 14-15, are rejected under 35 U.S.C.103(a) as being unpatentable over Toepfer et al. (6,460,943) in view of Tai et al. (6,119,059).

As per claim 11, Toepfer et al. disclose a vehicle braking system comprising a driver activated brake pedal, a brake pedal position sensor providing a plurality of brake pedal position for brake pedal, a brake pressure modulator operatively coupled to brakes (see column 2, lines 4-42), an anti lock brake controller that activates brake pressure modulator to modulate vehicle braking upon detection of an insipient wheel lock condition (see the abstract), wherein anti lock brake controller periodically measures vehicle deceleration and brake pedal position during activation of the braking system when insipient wheel lock condition is not detected (see columns 3-4, lines 32-35), and wherein anti lock brake controller identifies conditions of degraded braking effectiveness based on the periodically measured deceleration and brake pedal position (see the abstract), wherein anti lock brake controller adaptively adjusts a brake pressure control parameter of anti lock brake controller when a condition of degraded braking effectiveness is identified so as to compensate for the identified condition (see column 2, lines 4-43; and columns 6-7, lines 51-15). Toepfer et al. do not disclose brake fading. However, Tai et al. disclose the identified condition of degraded braking effectiveness is brake fading, and the measure of braking effectiveness degradation is determined according to an amount by which an estimate of brake temperature exceeds a nominal brake temperature (see the abstract; and column 5, lines 1-52). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teach of Toepfer et al., by combining the identified condition of degraded braking effectiveness is brake fading for correction of braking value at an equalization of braking value temperature of the wheel brake.

Claim 14 is method claim corresponding to system claim 11 above. Therefore, it is rejected for the same rationales set forth as above.

As per claim 15, Toepfer et al. disclose a method of operation for a vehicle braking system including a driver activated brake pedal, a brake pressure modulator, and an anti-lock brake control that activates the brake pressure modulator to modulate vehicle braking upon detection of an insipient wheel lock condition, the method comprising the steps: periodically measuring vehicle deceleration and a brake pedal position during activation of the braking system when insipient wheel lock condition is not detected (see columns 3-4, lines 32-35; identifying conditions of degraded braking effectiveness based on the periodically measuring vehicle deceleration and brake pedal position (see the abstract), adaptively adjusting a brake pressure control parameter of anti-lock brake control when a condition of degraded braking effectiveness is identified so as to compensate for the identified condition (see column 2, lines 4-42; columns 4-5, lines 63-29; columns 5-6, lines 57-20; and columns 6-7, lines 52-15). Toepfer et al. do not disclose fluid leakage. However, Tai et al. disclose the identified condition of degraded braking effectiveness is fluid leakage, and the measure of braking effectiveness degradation is determined according to an estimated rate of the fluid leakage (see column 7, lines 19-65). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teach of Toepfer et al., by combining the identified condition of degraded braking effectiveness is fluid leakage, and the measure of braking effectiveness degradation is determined according to an estimated rate of the fluid leakage for properly detect any abnormal can be result of degraded braking effectiveness.

7. Claim 4, is rejected under 35 U.S.C.103(a) as being unpatentable over Toepfer et al. (6,460,943), and Toepfer et al. (5,470,134) as applied to claim 1 above, and further in view of Sakuma et al. (5,125,723).

As per claim 4, Toepfer et al. do not disclose road surface friction coefficient. However, Sakuma et al. disclose estimating a road surface friction coefficient based on the periodically measured deceleration and brake pedal position (see column 3, lines 27-42; and column 4, lines 49-60), determining apply rate based on the estimated road coefficient of friction when conditions of degraded braking effectiveness are not identified (see column 6, lines 25-68), and determining apply rate based on the estimated road coefficient of friction when conditions of degraded braking effectiveness is identified (see columns 5-6, lines 29-23; and column 7, lines 3-61). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teach of Toepfer et al. by combining determining estimating a road surface friction coefficient based on the periodically measured deceleration and brake pedal position for appropriately adjusting braking control based on various driving surface conditions.

8. Claims 5, and 7 are rejected under 35 U.S.C.103(a) as being unpatentable over Toepfer et al. (6,460,943), Toepfer et al. (5,470,134), and Sakuma et al. (5,125,723) as applied to claim 4 above, and further in view of Tai et al. (6,119,059).

As per claim 5, Toepfer et al., and Sakuma et al. do not disclose compensating the estimated road surface coefficient of friction. However, Tai et al. discloses compensating the estimated road surface coefficient of friction for error due to the identified condition of degraded braking effectiveness (see columns 6-7, lines 38-18, and determining the apply rate based on the compensate estimate of road surface coefficient of friction and the measure of braking effectiveness degradation (see columns 7-8, lines 66-38). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teach of Toepfer et al., and Sakuma et al. by combining compensating the estimated road surface coefficient of friction

for error due to the identified condition of degraded braking effectiveness, and determining the apply rate based on the compensate estimate of road surface coefficient of friction and the measure of braking effectiveness degradation to provide pressure regulating to monitor the operation of a vehicle braking system.

As per claim 7, Toepfer et al., and Sakuma et al., do not disclose condition of degraded braking effectiveness is fluid leakage. However, Tai et al. disclose the identified condition of degraded braking effectiveness is fluid leakage, and the measure of braking effectiveness degradation is determined according to an estimated rate of the fluid leakage (see column 7, lines 19-65). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teach of Toepfer et al., and Sakuma et al. by combining the identified condition of degraded braking effectiveness is fluid leakage, and the measure of braking effectiveness degradation is determined according to an estimated rate of the fluid leakage for properly detect any abnormal can be result of degraded braking effectiveness.

9. Claim 8, is rejected under 35 U.S.C.103(a) as being unpatentable over Toepfer et al. (6,460,943), Toepfer et al. (5,470,134), and Sakuma et al. (5,125,723) as applied to claim 4 above, and further in view of Miller (4,800,991).

As per claim 8, Toepfer et al., and Sakuma et al., do not disclose mis-adjustment of adjustable brake. However, Miller discloses the braking system includes an adjustable brake, the identified condition of degraded braking effectiveness is mis-adjustment of adjustable brake, and the measure of braking effectiveness degradation is determined according to a difference in wheel speeds attributable to such mis-adjustment (see columns 2-3, lines 60-34; and columns

5-6, lines 42-42). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teach of Toepfer et al., and Sakuma et al. by combining the braking system includes an adjustable brake, the identified condition of degraded braking effectiveness is mis-adjustment of adjustable brake, and the measure of braking effectiveness degradation is determined according to a difference in wheel speeds attributable to such mis-adjustment for ensuring periodic adjustment of vehicle braking systems to maintain brake mechanism motion within predetermined level.

10. Claim 9, is rejected under 35 U.S.C.103(a) as being unpatentable over Toepfer et al. (6,460,943), Toepfer et al. (5,470,134), and Sakuma et al. (5,125,723) as applied to claim 4 above, and further in view of Lalor et al. (6,332,354).

As per claim 9, Toepfer et al., and Sakuma et al., do not disclose vehicle weight. However, Lator et al. disclose the identified condition of degraded braking effectiveness is excessive vehicle weight, and the measure of braking effectiveness degradation is determined according to an amount by which an estimate of vehicle weight exceeds a reference weight (see the abstract; column 2, lines 29-61; and columns 7-8, lines 36-44). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teach of Toepfer et al., and Sakuma et al. by combining the identified condition of degraded braking effectiveness is excessive vehicle weight, and the measure of braking effectiveness degradation is determined according to an amount by which an estimate of vehicle weight exceeds a reference weight for accurately monitor the operation of the vehicle braking system.

11. Claim 12 is allowable.

Remarks

12. Applicant's argument filed on 2/23/04 has been fully considered and they are deemed to be persuasive. However, upon updated search, the new ground of rejection has been set forth as above.

The new references Toepfer et al. ('134) disclose the identified condition of degraded braking effectiveness is brake wear, and the determined apply rate is increased by a predefined factor as cited in claim 1 above. Eslinger et al. disclose monitoring brake temperature to determine the degraded braking generated by brake fade in claim 10 above. Tai et al. disclose the identified condition of degraded braking effectiveness is brake fading, and the measure of braking effectiveness degradation is determined according to an amount by which an estimate of brake temperature exceeds a nominal brake temperature in claim 11 new added above.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dalena Tran whose telephone number is 703-308-8223. The examiner can normally be reached on M-F (7:30 AM-5:30 PM), off every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black can be reached on 703-305-8233. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-7687 for regular communications and 703-305-7687 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1113.

/dt
May 1, 2004

YVONEL BEAULIEU
PRIMARY EXAMINER